

EXHIBIT L

MARK REID LANNING - 12/2/2022

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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

TQ DELTA, LLC,)	
)	
Plaintiff,)	JURY TRIAL DEMANDED
)	
V.)	
_____)	_____
)	
COMMSCOPE HOLDING)	
COMPANY, INC., COMMSCOPE)	
INC., ARRIS INTERNATIONAL)	
LIMITED, ARRIS GLOBAL)	
LTD., ARRIS US HOLDINGS,)	Civil Action No.
INC., ARRIS SOLUTIONS,)	2:21-cv-310-JRG
INC., ARRIS TECHNOLOGY,)	(Lead Case)
INC., and ARRIS)	
ENTERPRISES, LLC,)	
_____)	_____
)	
NOKIA CORP., NOKIA)	
SOLUTIONS AND NETWORKS)	
OY, and NOKIA OF)	
AMERICA CORP.)	Civil Action No.
)	2:21-cv-309-JRG
)	(Member Case)
Defendants.)	
)	

ORAL AND VIDEOTAPED DEPOSITION OF
MARK REID LANNING
DECEMBER 2, 2022
REPORTED REMOTELY

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1 ORAL AND VIDEOTAPED DEPOSITION OF MARK REID
2 LANNING, produced as a witness at the instance of the
3 Plaintiff, and duly sworn, was taken in the above-styled
4 and numbered cause on the DECEMBER 2, 2022, from
5 11:05 a.m. to 7:42 p.m. before Kelly Bryant, CSR in and
6 for the State of Texas, reported by machine shorthand,
7 pursuant to the Federal Rules of Civil Procedure and
8 the provisions stated on the record or attached hereto.

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A P P E A R A N C E S

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ALSO PRESENT:

Trey Solis, Videographer and Exhibit Tech

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1 A. If you keep trying to use the same
2 parameters --

3 Q. Yes.

4 A. -- and same module -- same modulation method.

5 Q. Yes.

6 A. Then your bit error rate would probably not
7 stay at 10 to the -7.

8 Q. Fair enough. So one way to fix this is to
9 move a bit that you are -- you are -- you are
10 transmitting. You are -- you had 8 bits on channel 1.
11 You start -- you move one of the bits to one of the
12 other channels and then operate with 7 bits on channel
13 1.

14 So you have -- you added -- you got back
15 some margin, correct?

16 MR. ONG: Objection, form.

17 A. Okay. Again, going back to your hypothetical,
18 I need -- I need to stay straight and that will help
19 maybe keep the record straight.

20 So I first started with four channels at
21 30 dB, correct?

22 Q. (BY MR. CHIPLUNKAR) Right.

23 A. Then you said, because I want to add a 6 dB
24 margin, not to be -- not to be confused with SNR margin,
25 but margin to ensure that I get and can maintain the bit

1 error rate, I want to do 6 dB. So, essentially, that
2 leaves 24 dB for all four of those channels.

3 Q. Right.

4 A. Am I -- am I correct with your --

5 Q. Yes.

6 A. Okay.

7 Q. But -- but the 6 dB is the -- is the Court's
8 SNR margin because it is used in the calc -- it is used
9 in arriving at the bit error -- used in arriving at the
10 bits on each carrier --

11 A. You keep -- you keep using that word, and
12 every time you use a word that's been construed by the
13 Court, I go to the construction. So we must use a
14 different term or I can't answer your question.

15 I believe you're asking me, is it the
16 margin established for the specified bit error rate, or
17 what I refer to as the bit error rate margin. Just to
18 make sure I contrast that or distinguish it from the SNR
19 margin, which is added in addition to that.

20 Q. So in my hypothetical -- in -- in my
21 hypothetical with four carriers where the SNR on each
22 carrier is 30 dB measured, what is the 6 dB in your mind
23 that you are -- that we are providing?

24 A. It is the bit error rate margin, and that's
25 what the Court has -- see, and the Court has said, in

1 addition to the SNR required to maintain a specified bit
2 error for the link.

3 And they -- so that's why I'm calling it
4 the bit error rate margin.

5 Q. Okay. So you're calling the -- the -- you're
6 calling the 6 dB the bit error rate margin?

7 A. Yes.

8 Q. Which is SNR margin of the claim?

9 MR. ONG: Objection, form.

10 A. No. The SNR margin has to be separate and
11 apart. It's clear by the Court's order it is not the
12 bit error rate margin. It's an additional margin after
13 the bit error rate margin is established. We can read
14 it again.

15 Q. Okay.

16 A. That's my understanding, but...

17 Q. Let's assume there's no bit error rate margin.
18 Let's say you have 30 dB. How do I go about applying an
19 SNR margin to this carrier?

20 A. Okay. Now, you -- you've lost me.

21 Are we changing your hypothetical to a
22 different hypothetical or are we staying with this
23 hypothetical?

24 Q. We are -- we are staying with this
25 hypothetical.

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1 You've got a -- you've got four carriers.
2 Each carrier has 30 dB of SNR.

3 A. Right.

4 Q. Okay.

5 A. Has 30 dB of measured signal-to-noise ratio.

6 Q. Yes. Okay. Now, let's -- I want -- I want to
7 understand in your mind where does SNR margin come in.
8 How does SNR margin come in?

9 A. Okay. Fair enough.

10 Q. Okay.

11 A. And the Court has told us there's two
12 different margins -- or there's two different SNRs here.

13 The SNR -- so step one -- when I -- step
14 one is to measure the measured signal-to-noise ratio.
15 Then I actually apply a margin so that I can ensure that
16 each subchannel maintains a target bit error rate. And
17 you've used the bit error rate of 10 to the -7, or one
18 bit in every ten million. Okay.

19 So the first step is, when a margin --
20 when you measure 30 for each one, and in -- in your
21 question, in your hypothetical, you've said let's assume
22 we need a 6 dB SN -- bit -- bit error rate margin. In
23 other words, we need to apply a 6 dB margin to establish
24 the bit error rate. So, now, if we apply 6 dB to each
25 of those four subchannels, I take 6 away from 30, so now

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1 comparing it and saying now you've decreased or you've
2 increased the requirements.

3 They -- the example in the patent is done
4 differently than your hypothetical than you gave me, but
5 they come back to the same point is taking 6 dB off of
6 each subchannel so that you can achieve the BER.

7 MR. CHIPLUNKAR: Objection,
8 nonresponsive.

9 Q. (BY MR. CHIPLUNKAR) My question was, Column
10 2, Lines 4 says, "In many DMT systems, an additional
11 parameter is used to determine the number of bits
12 allocated to each subchannel."

13 Did I read that correctly, sir?

14 A. Yes.

15 Q. And then it says, "This parameter" -- the
16 parameter that is used in many DMT systems, correct?
17 You agree with me?

18 You're with me so far, that this parameter
19 is referring to the parameter that is referenced in the
20 many DMT systems?

21 MR. ONG: Objection, form.

22 A. So the parameter is called SNR margin. This
23 is --

24 Q. (BY MR. CHIPLUNKAR) Yes.

25 A. -- why the Court has provided us a

1 construction. You can ask me this question 100 more
2 times. I'm going to tell you that when I see the words
3 SNR margin, I'm going to go to the Court's construction.
4 I'm not going to answer anything different than what the
5 Court has construed, and this is not describing what the
6 Court has construed in the patent.

7 This is probably one of the main reasons
8 this term needed to be construed, because the patent is
9 confusing in this area.

10 Q. So your position today is that -- your opinion
11 today is that SNR margin as used in the patent is not
12 the same SMR (sic) margin -- is not the same SNR margin
13 as used in the many DMT systems prevailing at that time?

14 A. It's my opinion in Column 2, starting in Line
15 4 through Line 17, the words SNR margin that are
16 described in that portion of the patent are not as the
17 Court has construed SNR margin.

18 Q. Okay. And when the prior art that you've used
19 in your analysis -- Kapoor, for example -- when it uses
20 the word SNR margin, you agree with me that it is using
21 the word SNR margin as used in -- in the art, in the DMT
22 systems at that time, correct?

23 A. No, I don't agree. We would have to go to
24 each of the references I've cited. I've been very
25 careful to cite Kapoor and Chow, because it's a

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1 combination of Kapoor and Chow that I've used, and I've
2 been very careful to map the claims that include the
3 term SNR margin to the Court's construction of SNR
4 margin.

5 Q. So would it surprise you if I told you that
6 the Court's construction of SNR margin does not appear
7 anywhere in your analysis of the prior art?

8 A. That's not true at all. I have it at least
9 three times that I've applied it.

10 Q. Okay.

11 A. And multiple times. I strongly disagree with
12 that.

13 Q. Okay.

14 A. This is a lesson that I've learned -- let me
15 finish. This is a lesson I learned many years ago, that
16 you apply -- as an expert, you apply the Court's
17 construction.

18 That's what I'm trying to explain many
19 times to you is I will not go away or try to change the
20 Court's construction, and I have mapped the Court's
21 construction to each one of the claims as I've analyzed
22 them.

23 Q. Okay. If you could go to Exhibit 3 of your
24 report.

25 A. Okay.

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1 A. I describe how Chow defines the first SNR
2 margin, and then continued the discussion for the second
3 SNR margin.

4 So in order to understand how the logic
5 works for the second SNR margin, it's logical to look at
6 the first SNR margin, because there's two different SNR
7 margins required.

8 So on paragraph 349, I start my analysis
9 for the first SNR margin as it's disclosed by Chow, and
10 then I provide the references or the cites to Chow of
11 defining explicitly how Chow explicitly discloses that
12 SNR margins are used to transport data.

13 And the idea is, is modifying the SNR
14 margin as construed by the Court in order to transport
15 data at a maximum achievable rate or margin.

16 MR. CHIPLUNKAR: Objection,
17 nonresponsive.

18 Let -- let's take a break. Let's go off
19 the record. Ten minutes.

20 VIDEOGRAPHER: We're off the record.
21 Time is 3:27.

22 (Off the record).

23 VIDEOGRAPHER: We're back on record.
24 Time is 3:49 p.m.

25 Q. (BY MR. CHIPLUNKAR) Okay. Welcome back,

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1 Mr. Lanning. Before we proceed, did you speak with
2 anybody regarding your deposition testimony today?

3 A. No, nothing about my deposition.

4 Q. Okay. If you could turn to Exhibit 1, which
5 is the patent, and look at Columns 1 and 2.

6 A. Okay. I've got 1 and 2 open.

7 Q. Yeah. So -- so now, you agree with me that
8 Chow does not dis -- disclose the type of SNR margin
9 described in Columns 1 and 2 of the patent, correct?

10 MR. ONG: Objection, form.

11 A. As we've gone over many times, I believe Chow
12 discloses the claims as they've been -- as SNR margin
13 has been construed by the Court, and I've included my
14 analysis, starting at Element 10.C for the first margin,
15 and continued on with 10.D for the second margin.

16 Q. (BY MR. CHIPLUNKAR) But sitting here today,
17 you haven't provided an opinion that the product
18 discloses the type of SNR margin described in Column 1
19 and 2 of the patent, correct?

20 MR. ONG: Objection, form.

21 A. I have included the analysis.

22 Whether I understand what those columns
23 say, but those columns aren't clearly the same as the
24 Court's construction. So I followed the Court's
25 construction for my analysis.

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1 Q. (BY MR. CHIPLUNKAR) So for Element 10.C, can
2 you point me to someplace in Chow where Chow uses a
3 parameter to perform this allocation?

4 MR. ONG: Objection, form.

5 THE WITNESS: I'm just reading through,
6 and I'm referencing, and I'm just looking at the
7 references here to answer your question.

8 A. So, again, as I explained, the first part
9 of -- the first time I analyzed Chow's disclosure of the
10 Court's defined SNR margin term, I state in -- starting
11 in paragraph 349. So I give examples, and then -- and
12 then -- I think specifically Chow.

13 And I get to 351. I provide another
14 example, starts at page 13. And Chow, starting at page
15 59, discloses SNR margins are used to transport data and
16 different margins are used maximizing -- so that you can
17 maximize the total data throughput at a fixed margin
18 lower than the maximum achievable margin.

19 And so, the idea is optimizing the use of
20 the channels and setting the margins so that the overall
21 communication link can maximize its data. So Chow is
22 describing how he assigns a SNR margin as it's defined
23 by the Court to each subchannel to do that.

24 If you'd like me to go to Chow and look at
25 those pages, I'm happy to do that. But the -- the first